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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,383	07/01/2003	Ka Shing Kenny Kwan	P/4076-54	3682

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EXAMINER	
JOHNSON, JONATHAN J	

ART UNIT	PAPER NUMBER
1725	

DATE MAILED: 12/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/612,383	KWAN ET AL.	
	Examiner	Art Unit	
	Jonathan Johnson	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-25* is/are pending in the application.

4a) Of the above claim(s) *14-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1,2, and 4-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hisataka (JP 01-296636) in view of US 5,222,014 (Lin) and Okuyama (DE 3429375).

Histaka teaches a bump forming device (figure 7, item 7); a chamber system adapted to house the semiconductor devices (Figure 1, item 10); a gas supply for supplying an inert gas into the chamber system (figure 1, item 31); and a support table for supporting the semiconductor devices during bumping, the chamber system having an opening (figure 1, item 10, where the opening extends from item 10 to item 14); a bumping site located outside of the chamber system (figure 1, item 7, where features in figure 6, item 20 and 26a and portions of item 7 are located outside the chamber system), said support table being operative to move the semiconductor devices from a bumping site into the chamber system after bumping (figure 1, item 3); at the bumping site the support table being receivable into the chamber system through the opening (figure 1, item 3); including an oxidation reduction device for introducing a supply of inert gas to the bumping site (figure 1, item 31); wherein the bumping site is adjacent to an opening of the chamber system (figure 3, item 17); including a shroud positioned around the bumping site for covering one or more bumped semiconductor devices (figure 1, item 15); wherein the shroud

includes nozzles for introducing a supply of inert gas onto the semiconductor devices (figure 1, item 31); wherein the chamber system comprises an outer chamber, and an inner chamber that is houseable within the outer chamber (figure 6, items 11 and 2); wherein the inner chamber is removable from the outer chamber (figure 1, items 11 and 2); wherein the removable inner chamber comprises at least a portion of the support table and an inner chamber cover for forming an enclosure around bumped semiconductor devices (figure 1, item 11); including gas tubings that are detachably connectable to the inner chamber for bringing an inert gas into the inner chamber from an external source (figure 1, item 31); wherein the support table is coupled to a positioning device that is operative to move the support table along a first axis (figure 3, x axis); wherein the chamber system is coupled to a positioning device that is operative to move the chamber system along a second axis perpendicular to the first axis (figure 3, y axis); wherein the bump forming device is an ultrasonic wire bonder (abstract); wherein the semiconductor devices are comprised in a semiconductor wafer and the support table capable of supporting a wafer on the table (figure 1, item 3); and a gas supply for supplying an inert gas into the chamber system (figure 1, item 31). Lin teaches the semiconductor package having both wire bonds (figure 1, item 21) and solder bumps (figure 1, item 16). Okuyama teaches a chamber system to house the semiconductor device having a access opening (figure 4, item 2); and a support table for supporting the semiconductor device (figure 4, item 13). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Histaka's apparatus to be utilized in a solder bump package in order to increase the circuit density of the package (see Lin col. 10, ll. 10-30) and further to utilize a solder bump chamber system in order to effectively fuse the solder (see Okuyama abstract).

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Johnson whose telephone number is 571-272-1177. The examiner can normally be reached on M-Th 7:30 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jonathan Johnson
Primary Examiner
Art Unit 1725